

SYSTEM AND METHOD FOR DETERMINING MATERIAL PROPERTIES OF SAMPLES

ABSTRACT OF THE DISCLOSURE

A method is provided for nondestructively determining a material property of a porous sample. A first vessel is evacuated to a sub-atmospheric pressure, while a test pressure, greater than the sub-atmospheric pressure, is established in a second vessel containing the sample. The pressures of the first and second vessels are equalized by
5 opening a valve mechanism therebetween. The resulting pressure change in the second vessel exhibits an initial pressure drop followed by a transition to an equalization pressure. The envelope volume of the sample is determined from a minimum pressure attained by the second vessel upon initial opening of the valve mechanism, wherein the minimum pressure is related to the initial pressure drop. The envelope density of the
10 sample is thus a quotient of the mass and the envelope volume of the sample. The absolute density and relative absorption of the sample may also be determined and an associated system is provided.